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Elizabeth F. Maxfield
Vice President of
Industry Affairs

May 7, 1993

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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

Ms. Donna R. Searcy
Secretary
Federal Communications Commission
1919 M Street N.W., Room 222
Washington, DC 20554

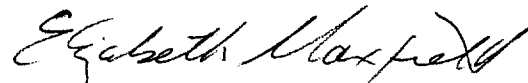
Re: ET Docket 93-62
Ex Parte Presentation

Dear Ms. Searcy:

On Friday, May 7, 1993, the Cellular Telecommunications Industry Association ("CTIA"), represented by Elizabeth Maxfield and Ron Nessen, met with Dr. Robert Cleveland, Office of Engineering and Technology to address the cellular industry's efforts concerning the health and safety effects of EMF radiation in the context of the above-referenced docket.

If there are any questions in this regard, please contact the undersigned.

Sincerely,


Elizabeth F. Maxfield

Enclosure
kg

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Cellular Telecommunications Industry Association

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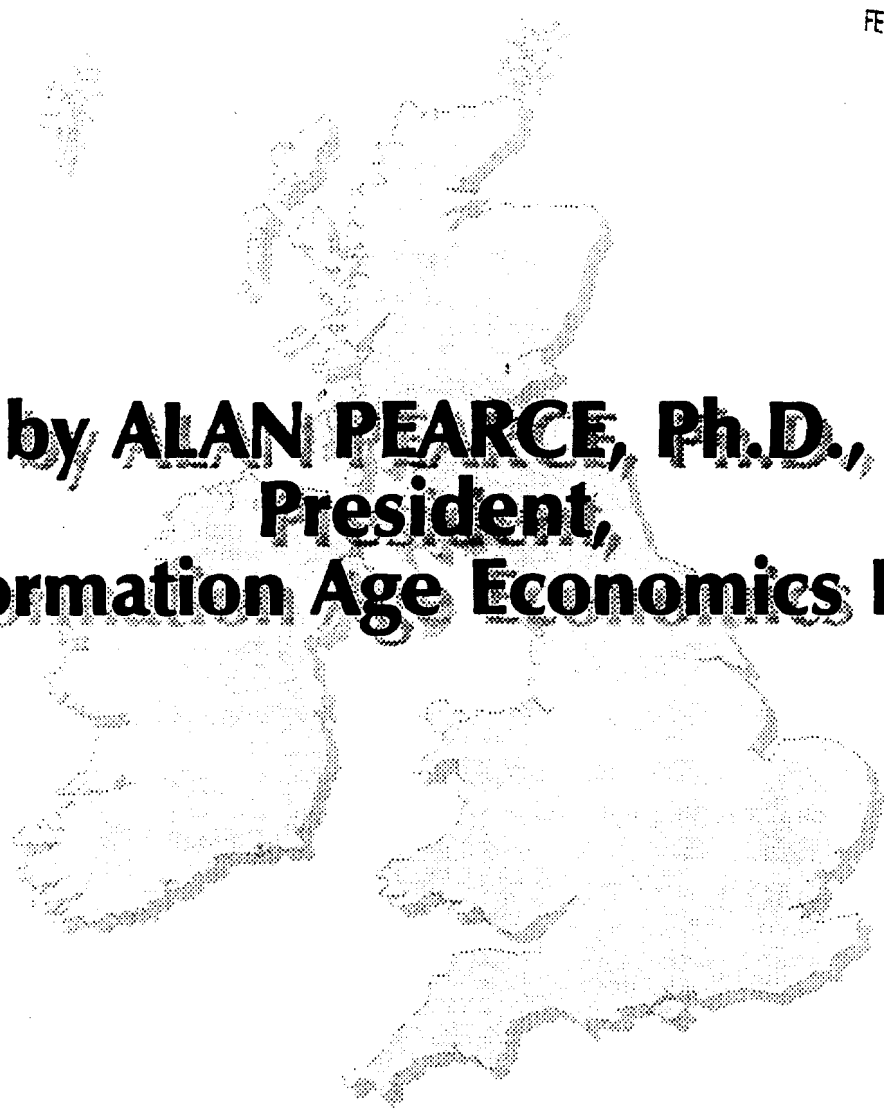
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BRITISH PCN POLICY PITFALLS: Implications and Lessons for the U.S.

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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY



**by ALAN PEARCE, Ph.D.,
President,
Information Age Economics Inc.**

**For The Cellular Telecommunications Industry Association
March 1993**

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BRITISH PCN POLICY PITFALLS: IMPLICATIONS AND LESSONS FOR THE U.S.

EXECUTIVE SUMMARY

There are lessons for the U.S. in British wireless policy.

British policy:

- Failed because it tried to create more networks to compete with existing networks, instead of giving licenses to multiple operators and leaving the decisions about services and markets to the operators and their customers (the marketplace).
- Produced fewer interested competitors and limited the scope of services actually available to consumers by seeking to create specific kinds of nationwide networks by mandate.
- Prevented the integration of new and existing services and markets and limited the availability of new services by excluding incumbents from licensing.
- Failed to consider the adaptability of existing and prospective markets and services.
- Adopted too rigid a structure, requiring specific numbers of providers to deploy systems too quickly for markets to fund the desired infrastructure.

U.S. policy should:

- Encourage competition by giving licenses and spectrum to multiple operators and leaving the decisions as to services and markets to the licensees and the marketplace.
- Follow tested and proven licensing policies for wireless services, i.e., the MSA/RSA licensing policy) as a means of gradually deploying market-specific

- Avoid prescribing or prejudging the role of specific services or carriers in the wireless marketplace.
- Be flexible, permitting providers and the marketplace to drive the development and deployment of market specific and customer-responsive services.

Part 1 : INTRODUCTION AND OVERVIEW

British policy on Personal Communications Networks (PCNs) specifically and mobile telecommunications in general is extremely confusing, not just to Americans but also to the British themselves.

A series of rapid fire incremental public policy initiatives has left the British telecommunications industry wondering what British policymakers had in mind when, in just a few years, they launched two cellular telecommunications competitors, Vodaphone and Cellnet (in 1984), four telepoint competitors, with only one, Hutchison's Rabbit, currently offering limited service (in 1989), and three PCNs, with only two, a Mercury consortium and a Hutchison venture, planning to launch in the 1993-94 time frame (also in 1989).

Today, many members of Britain's telecommunications industry are asking:

- What is the difference, if any, between cellular and PCNs?
- Is telepoint a substitute for payphones, which had a poor record of service prior to the launch of telepoint; or a new way of accessing the local exchange network; or a limited form of mobile communications?
- Can the British market sustain all of the new carriers that the policymakers planned to launch, i.e., two cellular, four telepoint, three PCNs?
- Where do the newly emerging cable TV companies, which are permitted under British policy to offer telecommunications services, fit into this complex competitive picture?
- How will the existing wireline, known in Britain as fixed line, incumbents, British Telecom and Mercury, react to all of the newly emerging competition? Is a price war looming in the not-too-distant future?
- Who are the likely winners and losers as the British telecommunications industry evolves from monopoly, in 1981, to growing and perhaps fierce competition in 1993?
- Is the British public going to benefit or be hurt by these policies?

From today's perspective, it is clear that there are a bewildering proliferation of choices for consumers of telecommunications services in Britain. These questions, however, are of more than academic interest to U.S. public policymakers and companies with business interests in the U.S.

telecommunications-information industry. What can the U.S. learn from the British policy initiatives in mobile communications?

- Although it may be too soon to formulate answers on the success or failure of Britain's policy thrust from monopoly to competition in telecommunications services, it is already clear that:

1. Telepoint, also known as CT2, has failed because of launch costs problems, the reaction of British Telecom (BT) in improving payphone service, and the lack of clarity in what market telepoint was supposed to serve. A joke circulating in London says that there are more telepoint antennas than there are telepoint customers!

2. PCN has been scaled back significantly. Instead of the planned three nationwide carriers, there are now only two and the initial plans of these two demonstrate that they will not compete head-to-head -- at least initially. One PCN company plans to launch in the Greater London area while the second plans to launch in the Industrial North of England.

3. The policymakers in Britain failed, because they attempted to create more "telecommunications networks" to compete with existing telecommunications networks, instead of permitting the marketplace to determine what types of services are being demanded by the public. The various and often conflicting British mobile or wireless communications policies promoted diversity of network ownership and operation -- two cellular carriers, four telepoint operators, and three PCNs -- instead of giving licenses to more operators and leaving decisions regarding services and markets to be served to them and the marketplace. As a result of the policies that have resulted in network creation as opposed to companies providing services that the market demands, Britain will get significantly less competition in the wireless area than was originally planned by the policymakers.

4. The British money market is not robust enough in a recession to provide the necessary financing for all of the new competitors.

5. British public policy in telecommunications services cannot easily be extrapolated to the United States, because of major market, cultural, social, political, geographical, and economic differences.

British Telecommunications Industry Structure

The structure of the services segment of the British telecommunications industry is somewhat different from that in the U.S. and can be summarized as follows:

There are 26 million so-called fixed lines, 20 million residential and 6 million business, primarily controlled by BT with a small percentage held by Mercury. Several cable TV companies have an infinitesimal but increasing number of telephone lines, fewer than 100,000 by year end 1992. BT is the dominant fixed line carrier in Britain. There is only one city-owned local telephone company serving Hull.

There are approximately 1.4 million cellular telephone subscribers served by two cellular carriers, Cellnet, with BT as a majority owner, and Vodaphone.

There are 700,000 paging customers served by a variety of companies, including Hutchison, a relatively new telecommunications service provider in Britain.

There are 800,000 Private Mobile Radio (PMR) customers served by a variety of companies. In Britain, PMR equates to Special Mobile Radio (SMR) in the U.S. Unlike the U.S., however, PMR is predominantly used for intra-company use, i.e., it is NOT a service held out to the public at large as SMR is

focusing primarily on the mobile telecommunications segment of the market; will examine the development of mobile telecommunications standards within the European Community (EC); will focus on business strategies and scenarios in mobile telecommunications in Britain; and presents lessons, implications, and policy recommendations that may provide some insight and assistance to U.S. policymakers.

Part 2 : LESSONS/IMPLICATIONS AND POLICY RECOMMENDATIONS FOR THE U.S.

Introduction

There is a belief that because the the U.S. and Britain speak the same language and have similar systems of democratic government, that policies and business ideas developed in Britain naturally migrate to the U.S. This is, clearly, not always true in a general sense and may, in fact, be particularly untrue in the specific case of PCN policy and business development. Britain and the U.S. differ in many ways : Britain is small (barely 1,000 miles from tip to toe), while America is large; Britain's population is highly concentrated in only five areas all within a day's drive from each other -- Greater London, the Midlands, the North, South Wales, and South Scotland, while America's population is widely dispersed with vast distances to be travelled between major cities; the British are much more reluctant to use or overuse the phone than are Americans, based largely upon the price of service (relatively high in Britain, relatively low in the U.S.) and the original U.S. public policy goal of establishing universal service; the British generally have lower incomes than do Americans, eat out less often, and move jobs and residences less frequently; and Americans are much more likely to adopt and adapt to new technology than are the British.

All of this is not to say that the British and the Americans do not have their similarities. Both societies are highly mobile. Indeed, the U.S. and Britain are among the world's leaders when it comes to demand for mobile communications services.

Lessons/Implications

- Britain has played a major role in shaping the vision for mobile communications services. The publication of "Phones on the Move" (see later in this report and the bibliography) probably changed the course of history of mobile communications worldwide. But this leadership has come at a price : Britain may have gone too far too quickly by attempting to create 2 cellular carriers, 4 telepoint providers, and 3 PCN networks, all with incompatible technologies and standards, leaving some of them facing uncertain futures. There is a lesson here in both the numbers of networks created by British government policy and the lack of a coordinated and acceptable transmission standard. Standards can clearly be set by a government, by an international organization such as the International Telecommunication Union, and by a dominant company within an industry

segment. In the U.S. standards setting may also be driven along a middle way -- by industry consensus.

- British policymakers, primarily the government, did not properly anticipate that the telecommunications-information industry is adaptive and that markets adapt along with the industry. If too much competition is created by the government, the market and the industry may be slow to adapt to those changes and, as a consequence, the market stalls, in part due to a lack of necessary funds with which to build the infrastructure and, in part due to a perceived lack of business opportunities.

- The British frequency plan -- basically the responsibility of the Department of Trade and Industry (DTI) in the context of international agreements -- was badly laid out. Cellular was allocated 30 MHz of spectrum in the 900 MHz band and, because it was analog, quickly confronted a capacity problem. Telepoint was squeezed into the 1.7-1.9 GHz band. And PCN was initially allocated 150 MHz at 1.8 GHz. Spectrum allocation should, if possible, be both fair regarding licensing eligibility and adequate. British policy was neither. It excluded certain participants in the telecommunications-information industry and was inadequate when applied to cellular and more than adequate when applied to PCN.

- The British policy goals were poorly conceived in PCN, i.e., three national licensees at a high frequency band necessitating high capital expenditures in order to provide a nationwide infrastructure. The two PCN operators that have survived -- and there is doubt about whether two will ever become operational -- are, in fact, planning in one instance a metropolitan network, i.e., the Mercury plan for Greater London, and a regional network, i.e., the Hutchison plan for the North of England. Neither PCN operator plans to be fully national at this stage and there may, eventually, be a consolidation and/or merger between the two PCN operators. Clearly, transparency and/or seamlessness of competing networks ought to be a major U.S. public policy goal. This policy goal was totally ignored in Britain, and the British consumers will now have to pay the price.

- Policymakers in Britain either refused to mandate or totally ignored an opportunity to create transparency of mobility. Users, if they are to be truly empowered in the wireless age, must be able to have terminal, i.e., equipment, mobility; personal mobility; high quality of service; affordable service; and a high degree of user friendliness. All of these, clearly, have cost, price, and competitive implications. From today's perspective, none are being adequately addressed in Britain.

- PCN, like telepoint before it, may have been permanently damaged or even sabotaged in Britain because of government imposed conditions, i.e., the nationwide service concept and the desire that PCN compete with both cellular and the established public switched network. The PCN operators say that they each plan to spend between \$1 and \$2 billion in the creation of their microcell networks over the next 10 years. Several executives of the two remaining carriers have said that their prices will be at least 20% higher than current BT prices for residential use of the public switched network.

Equipment availability and its price are major questions, but manufacturers say that if and when equipment becomes available it will cost the user anywhere from \$300 to \$600 for a portable phone. If the mobile market totals 8 million by 2000, because of a late start vis-a-vis cellular, the PCN carriers are likely to capture only a 30% market share, or 2.4 million subscribers -- a highly optimistic forecast. Because PCN is attempting to create a mass market from

Policy Recommendations

The following policy recommendations stem from this research:

- British PCN and wireless policies tell the U.S. what NOT to do as opposed to what to do.
- Government mandated national PCN networks are NOT recommended as part of U.S. PCN policy. It is already clear that Britain's major policy mistake regarding PCN was the requirement placed on licensees to build national networks over an eight year period. This is mandatory, not voluntary, public policy and the PCN companies must build national networks if they are to obtain the full 50 MHz of spectrum that each network was allocated in return for the building of national PCN infrastructures. This policy has not only dramatically increased costs but has also imposed upon the two remaining carriers a mass marketing strategy that stifles imagination, innovation, and technology. Both PCN carriers have been compelled to focus their infrastructure and marketing efforts on Britain's major metropolitan areas, and are ignoring the rural parts of Britain which are regarded as uneconomical. To this extent, the PCN operators are following, at least in part, FCC policy in cellular telephony, which focused its initial efforts on the 30 top Metropolitan Statistical Areas. The costs of establishing and building nationwide PCNs in the U.S. would probably be so prohibitive as to inhibit the development of the necessary infrastructure and services. This is not to say that U.S. policymakers should not allow the development, ultimately, of national networks, if that is what the market demands. It is the mandated creation of national PCN networks that is stifling the creation of viable personal communications services in Britain.
- If PCN is to grow and prosper in the U.S., licensees must be free to innovate and introduce new services not currently offered, for example within building and on-site networks, wireless LANs and PBXs, wireless computer networks, etc. This does not preclude the development of mass market services, it merely adds other opportunities that may be developed by PCN entrepreneurs.
- Public policy in the U.S. should be inclusive, not exclusive, i.e., companies and entities applying for FCC authority to build a PCN and offer services over the network should be given equal consideration. Public policy regarding spectrum allocation and assignment should also be fair and adequate. In

- FCC policy should attempt to establish standards that encourage network transparency so that customers can easily move from one network to another. The British did not do this, even though it is a stated European Community (EC) public policy goal.
- The FCC should adhere to the tried and tested licensing policy that was adopted for cellular telephony, i.e., the Metropolitan Statistical Areas (MSAs) and Rural Statistical Areas (RSAs). Although Britain and the U.S. are vastly different geographically, there are major metropolitan areas in Britain and, from today's perspective, it seems that British policy should have looked at a system of licensing that focused on major metropolitan areas and then expanded into a nationwide PCN service.
- The FCC should let the market decide what services are to be offered by the PCN service providers. If the market ultimately mandates national networks with national mass marketing, then they will develop naturally and should not be government mandated.
- The FCC should focus its policy initiatives in PCN on spectrum allocation, assignment of licenses, and on the establishment of appropriate technical standards, and then should stand back and let the market take over.
- The U.S. should use the British policy experience to develop a personal communications service policy that is flexible so that the companies that offer service can experiment and innovate, giving the market a wider array of choices.

Part 3 : THE BRITISH TELECOMMUNICATIONS INDUSTRY -- FROM MONOPOLY TO COMPETITION?

Introduction

The British government was the first within Europe to embrace the concept of privatization of telecommunications services -- and the promotion of competition with a regulatory overlay. The British government is committed to promoting the availability of nationwide, universal, mobile services, and is also actively encouraging cable TV companies to offer telephone services in competition with the dominant carrier, BT, and for the past decade BT's only major competitor, Mercury.

Britain has provided a model of how to successfully achieve privatization. When British Telecommunications PLC (BT) was privatized in the mid-1980s, it almost immediately began to serve its major customers in ways never before thought possible.

BT had been a state-owned enterprise from its very beginning and, for many years, had been an integral part of the British Post Office. The 1981 Telecommunications Act established BT as a nationalized company separate from the Post Office. At the same time the British government decided to sell its overseas telecommunications company, Cable & Wireless, which later created Mercury Communications, which today is a growing domestic competitor of BT's. In 1984, another Telecommunications Act established BT as a privately held company via the sale of 51% of the government's ownership to the public. A regulatory body was also established. In privatizing BT, then Prime Minister Margaret Thatcher hoped to make it more competitive and more responsive to its customers and to the market. Because the British government was privatizing a virtual monopoly, very little changed in the management of the company, other than to remove political interference and replace it with a regulatory body, known as OFTEL (the Office of Telecommunications).

During the debate on privatization, the Thatcher government made three important decisions:

- A director general of OFTEL was appointed to regulate BT in the public interest. OFTEL is similar to the Federal Communications Commission (FCC) in the U.S.
- BT had to submit to a price cap proposal linked to the retail price index minus a productivity factor. In other words, the retail price index minus a

number to be determined by the director general became the new price of basic telephone service. In fact, the price of basic services had to be reduced in real terms over a five-year period. Thus price regulation was adopted in Britain, as opposed to rate-of-return regulation (a form of cost, price, and profit regulation) that had been the norm in the U.S.

- A limited form of competition was created. Mercury Communications Ltd., originally a joint venture of Cable & Wireless PLC, British Petroleum Co. PLC, and Barclays Bank PLC, was set up to compete with BT. Mercury was given a "license" to compete in 1984, was given a low entry price because it did not have to pay BT cost-related access charges, and it was given seven years in which to establish market share before the British government conducted the so-called duopoly review of this first experiment with competitive telecommunications service provision. Today Mercury still has a relatively small, but growing, share of the British telecommunications service market. Many critics have referred to BT and Mercury as the "cosy duopoly".

The price reduction forced by price cap regulation spurred the rapid growth of BT's revenues by increasing demand for telephone services. In Britain, local exchange service had been priced high because it was assumed that only rich people and businesses could afford telephone service. Consequently, the high revenues derived from telephone service were used to subsidize the postal service, which was presumed to be used mostly by the poor. This is a major difference between provision of telephone services in Britain and the U.S., where universal service has always been the public policy goal.

Once BT was privatized and telephone service prices were reduced in real terms, the demand for service rose dramatically, more lines were installed and higher revenues were generated. The result was a dramatic increase in the price of BT stock, in spite of the fact that a limited form of competition had been launched. Because of the success of privatizing BT, the British government decided to give other branches of the telecommunications industry a competitive spur, primarily mobile services and cable TV services.

As late as 1988, the British government received about 1% of its gross receipts from BT's profits -- approximately \$2.4 billion, or 1.6 billion British pounds.

Mobile Communications

Two government sponsored reports resulted in greatly increased business opportunities in the mobile communications segment of Britain's expanding telecommunications industry:

- The Cellular Mobile Radio Committee Report of 1982.
- The Report of the Independent Review of the Radio Spectrum in 1983.

In 1982, the British government established a framework for cellular telecommunications and allocated 30 MHz in the 900 MHz band. This is approximately half the spectrum allocated to cellular service in the U.S. As a result, British cellular service providers have complained of a spectrum shortage right from the beginning of service in 1985. There was a staggering demand for service and from early 1985 to 1990 subscribership rose from zero to more than 1 million. There are more than 100 agents selling cellular service and equipment in Britain, with many agents having multiple sales and service outlets, so cellular services and equipment are readily available throughout the country.

In the mid-1980s, following the early 1980s launch of the U.S. cellular telecommunications duopoly policy, the Department of Trade and Industry (DTI) copied U.S. policy and issued two licenses for the establishment of cellular mobile telecommunications services in Britain. One license went to a company named Cellnet, with BT as the majority shareholder, and the other to Vodaphone, owned by an unexpected outsider, Racal, a British electronics company with valuable British government military contracts. Racal had developed high quality mobile telecommunications technology for the British military and, it was assumed, was rewarded by the British government with the grant of a cellular telephony license.

From the beginning, the British government decided that cellular telephone service would be sold differently from wire telephone services. Instead of selling directly to the public, the two cellular licensees would sell via so-called service providers, a variety of companies that had direct contact with the public, usually had stores on the high streets of Britain, and provided equipment and service at a price determined by the cellular licensees and the service providers. The two licensees appointed the service providers, but almost any entity was eligible to apply as a service provider. This sales/service arrangement bears little resemblance to the method of marketing cellular services and equipment in the U.S., where the major cellular companies provide both services and equipment, and also work in conjunction with so-called resellers and agents. Resellers buy cellular services from cellular companies at wholesale prices and resell at the retail level in order to make a profit, while agents act primarily as service and equipment agents for the cellular carriers and earn a commission on sales.

Vodaphone adopted an aggressive marketing strategy when it launched its cellular service in 1985, and raced ahead in signing up cellular customers.

Because of this it quickly became the number one cellular company and today has approximately 60% of the 1.4 million cellular subscribers in Britain. Recently, Cellnet recognized that it was slipping in market share and began to improve its service offerings and restructured its rates in order to attract low volume cellular users. Vodafone responded by advertising copycat tariffs.

Today, both Vodafone and Cellnet have effective nationwide networks in place, but both say that they need additional spectrum in order to offer a wider array of services to a wider public. One of the major problems confronting both carriers is spectrum congestion which clearly affects service quality and customer satisfaction. The bandwidth provided to the two cellular carriers is limited to 12.5 MHz each, compared to 25 MHz each in the U.S. Cellular service in Britain is regarded as a service for the business elite and/or the rich and privileged. The pricing of cellular service and equipment offerings are such that the general public cannot afford to join the wireless revolution -- at least not for the time being. Even so, with approximately 1.4 million customers, Britain's cellular telephone network is second in numbers of subscribers to that of the United States, but in Britain cellular penetration rates are higher, i.e., a greater percentage of potential cellular users actually subscribe. Both cellular systems are highly profitable. Nonetheless, the British cellular providers complain that they were awarded too little spectrum and that if they had been allocated the 50 MHz each given to the PCN providers then cellular service in Britain would be more readily and less expensively available in Britain. Indeed, the cellular carriers claim that, given adequate spectrum, they could serve a mass market.

While cellular telephony was expanding rapidly in Britain, one of the

began with a letter from Lord Young, then Secretary of State for Trade and Industry, in which he said: "The United Kingdom is a world leader in mobile telecommunications. Our cellular radio network operators have shown a growth unmatched anywhere else. The page is now commonplace. We are pioneering the exciting new concept of Telepoint. More and more, UK business is coming to rely on mobile communications, and government has acted as an enabler, making sure they get the services they need...In its enabling role, the government is prepared to make available a considerable block of radio spectrum to meet the developing needs of the market for mobile communications."

The major thrust of British policy regarding the development of mobile communications from the publication of "Phones on the Move" to the present has been to make available sufficient spectrum in order to provide an affordable wireless telephone service to everyone who demands it. Unfortunately, the policy also included restrictions and conditions that have resulted in the frustration of this policy objective.

Following "Phones on the Move", the British government quickly licensed four companies to provide telepoint services, but one-by-one the licencees dropped out pointing to a lack of public demand, high infrastructure costs in the middle of a recession, too much competition, and confusion relating to

going to be and, in any event, the launching of telepoint has been stalled by (1) the recession, (2) the rapid upgrading of payphones in Britain, i.e., they now work whereas in the past they did not, and (3) the allocation of spectrum for and the licensing of nationwide PCN. Detractors also say that those who have tested the telepoint service, known as Rabbit, complain that if they walk any distance from the base station, for example to a coffee shop at a railroad station, there is either signal loss or deterioration. Proponents say that these "technical" problems will be solved once the appropriate infrastructure is installed.

In the future, telepoint may hold the promise to become a nationwide radio access to the public switched telecommunications network. Telepoint has been successfully launched, by Hutchison, in Hong Kong, where 40,000 users signed up for service in the first nine months. The population of Hong Kong is six million and the people spend a lot of time on the street and outside, as opposed to being in offices. This is believed to be ideal territory for telepoint.

Whatever future telepoint has, in Britain or elsewhere in the world, it is NOT for people on the move in the traditional sense. People in cars, on trains, in planes, etc., will not be able to use telepoint. To be effective telepoint has to have antennas in and around buildings where people congregate but do not move rapidly. Therefore telepoint is not expected to attract users who are on the move and need to be in constant two way communication with others. If telepoint is upgraded and given inward as well as outward dialing capabilities, then it could be used for in-building communications similar to plans in the U.S. for wireless Local Area Networks (LANs) and wireless PBXs. Regardless of its future potential, Britain's policymakers, by launching telepoint concurrent with discussion of "Phones on the Move" led many to believe that telepoint was an integral part of a nationwide wireless telephony movement.

Within months of licensing the telepoint operators, the British government attempted to launch PCN by licensing three companies which said that they planned to offer nationwide service. In effect, PCN in Britain has been a huge spectrum giveaway. The government assigned 150 MHz of spectrum at 1.8 GHz (1800 MHz) and said that the licensees were entitled, once their networks had been built, to 50 MHz each. The amount of spectrum allocated to PCN, 150 MHz, compared to the "negligible" amount of spectrum allocated to cellular, 30 MHz, resulted in a policy uproar in Britain where the incumbent cellular carriers criticized the British government for creating what could

that three PCN licenses, running for a period of seven years, would be awarded to:

- Mercury Personal Communications (MPC), initially a joint venture between Mercury (a subsidiary of Cable & Wireless) and US West, which has recently added Bell Canada Enterprises (BCE) as an investor. BCE owns Bell Canada, the major telecommunications service provider in Canada, and Northern Telecom, a leading equipment manufacturer.
- Unitel, which quickly abandoned its plans to build a separate PCN network and merged with MPC.
- Microtel, now owned by Hutchison, with British Aerospace still owning a minority stake that it allegedly wants to sell. Originally Microtel was partly owned by Pacific Telesis and Millicom, two U.S. companies, and Matra, a French company, but all three backed out of the venture. Pacific Telesis said it abandoned its plans to build a PCN network in Britain because digital cellular will provide the same features and ease of use; costs, demand and equipment availability are uncertain; the government mandated rural coverage which is, and is likely to remain, uneconomic.

Although one of the three original licenses has been abandoned, so far there have been no takers, even though up to 50 MHz of spectrum is apparently going begging. Experts in Britain speculate that the third license could -- eventually -- be awarded to a consortium that includes the newly evolving cable TV providers, because of a presumed synergy between wireless communications and cable TV's ability to offer telecommunications services in Britain. Pacific Telesis, however, maintains that no more than two PCN

1-1 Page a limited amount of information on a common subject

evolve to be a universal service offering which means that it could, conceivably, replace the current public switched telecommunications network in Britain. In other words, the PCN operators believe that they have the potential to serve every existing telephone customer in Britain with high quality, relatively low cost service. Cellular, on the other hand, is high power and larger cells, which may translate to cellular being confined to serving users who are on the move at speed, while PCN can offer service to everyone else. Because of the small cell structure needed for PCN, it is not deemed to be an efficient means of delivering services to people travelling at speeds in excess of 50 m.p.h., which is regarded as an extremely LOW speed in Europe where even commuters drive at speeds in excess of 70 m.p.h. Although no policy decisions have been made in the U.S. regarding PCN, the system in the U.S. could be similar, i.e., microcellular and low power, thus forcing the operators to search for market niches not currently served by the incumbent cellular carriers.

- The two cellular carriers in Britain are already in danger of running out of spectrum and more cannot be assigned at 900 MHz. This means that the cellular carriers have to begin to upgrade their existing analog systems to digital GSM (Group Special Mobile) standard, an EC standard for the digital transmission of mobile communications -- see later chapter. PCN has no such migration and upgrading problems since PCN will adopt the EC-mandated GSM standard right from the beginning.
- The greater amount of spectrum available to PCN and the emerging competition with the established cellular carriers could result in greater market segmentation and higher rates of service innovation.
- Hutchison, the sole operator of a telepoint system in Britain, believes that there is a potential to integrate its telepoint service and its PCN service -- an "advantage" that its cellular competitors do not have. Not everyone agrees with this Hutchison assertion and telepoint is still regarded with some skepticism in Britain.

The Duopoly Review

In November, 1983, the British government said that it did not intend to license operators other than BT and Mercury to provide basic telecommunications services over fixed lines, whether cable, radio, or satellite, both domestically and internationally, for at least the next seven years. This policy of licensing only BT and Mercury to provide what the British call "fixed line" service subsequently became known as the duopoly policy. The government emphasized in 1983 that the duopoly policy would be reviewed at the end of the seven year period.

In a July, 1986, report, "Financing the BBC", there was a recommendation that the national telecommunications systems, i.e., BT and Mercury, and any subsequent entrants, should be permitted to act as video programming common carriers. In November, 1988, the government published a "Broadcasting White Paper" saying that, while it saw the attraction in the underlying idea of video common carriers as a route to additional competition in the entertainment services market, implementation of the recommendation in its original form would be impracticable and could inhibit the growth of competition in telecommunications networks. The government therefore said that it would examine the recommendations further at the time of the duopoly review.

In March, 1991, the British government concluded its duopoly review and decided to end the telecommunications duopoly policy that had applied to BT and Mercury. The government invited companies, institutions, and people to come forward and apply for licenses to run new telecommunications networks. The Department of Trade and Industry published its findings stemming from the duopoly review in a paper entitled, "Competition and Choice : Telecommunications Policy for the 1990s".

The key elements of the policy agenda set out by DTI include:

- The ending of the duopoly policy and therefore encouragement of new companies to apply for licenses to build and operate new telecommunications networks.
- Giving existing mobile and cable TV operators greater freedom to provide telecommunications services in their own right rather than as the agents of BT and/or Mercury.
- BT was ordered to further reduce the price of calls and related charges from Retail Price Index (RPI) minus 4.5 to RPI minus 6.25, making it possible for prices to fall more quickly than they otherwise might have done. International services were included in a price control policy for the first time and reduced by 10%.
- A mandated early introduction of equal access by which customers can exercise a choice as to the trunk operator that carries their call. This policy was rolled out during 1991 and 1992 and must be made available to the majority of telephone users within five years, i.e., by 1994.
- BT and Mercury are permitted to apply through associate companies for franchises to provide entertainment services in local areas, consistent with the British government's broadcasting policy, but not to be granted a national franchise for the foreseeable future.

- BT was ordered to put in place a more effective low user calling plan to benefit the 2 million customers who make least use of their telephone but in many cases rely on it as a lifeline.
- BT was ordered to introduce tariff packages, for example to permit volume discounts on calls. This policy is designed to bring "big benefits" to larger users.
- A plan to make it easier for new companies to enter the telecommunications market in Britain and offer new services to customers.
- The introduction of number portability, enabling people to move from one network to another without changing their telephone number.
- Existing cellular retailers can expand and offer services to the public making it possible for people to obtain their telephone service from an independent company and not have to rely on the network operators. This is similar to resale and agents in the U.S.
- Mobile operators will be allowed to offer new services over their radio networks.
- The development of a wide range of new satellite services focusing on